PUBLIC COMMENTS AND RESPONSES TO COMMENTS REGARDING THE FINAL PERMIT DECISION FOR THE HOLCOMB COMMON FACILITIES, LLC, LANDFILL EXPANSION, FINNEY COUNTY

Please note that comments received have been grouped into subject categories and are noted in italics with the responses to the comments noted in regular font.

COMMENTS RELATED TO LANDFILL SITING

Comments relating to landfill siting received from all the commenters are grouped together and presented in italics below.

Siting a landfill so close to the Arkansas River seems somewhat risky and unwarranted, especially since the site is over a sensitive groundwater area and the KGS describes the area as highly permeable sand dunes.

The proposed landfill near the Arkansas River to dispose of ash and sludge could be another disaster waiting to happen.

The amount of coal ash, sludge and residues that are proposed for a site only a mile from the Arkansas River, over what the KDHE has designated as a sensitive groundwater area, and what the KGS describes as highly permeable sand dunes is a matter of great concern.

I can appreciate the concerns environmentalists have raised regarding the placement of the landfill and its toxic contents on sand dunes one mile south of the Arkansas River.

The proposed expansion resides in what the KDHE considers to be a "sensitive groundwater resource", in an area with highly permeable sand dunes only a mile away from the Arkansas River.

The application for permit expansion requires the permittee to notify and request comments from several federal and state agencies, which have expertise and jurisdiction in various areas of interest ranging from fish and wildlife concerns to flooding and wetlands concerns. Over and above KDHE's review regarding the statutory location restrictions relating to navigable rivers and proximity to public surface water intakes, four federal agencies and seven state agencies were notified by the permittee, and the comments received were processed by the permittee.

State agencies notified included the Kansas Conservation Commission, the State agency that has identified areas of Kansas that may have alluvial or dune sand for publishing in a map commonly known as the Sensitive Groundwater Map.

Within KDHE, the permit review team has considered the proximity of the site to the Arkansas River. Consideration has been given to the possibility for fluctuating groundwater gradient and interconnectivity as well as the interaction of fine-grained media of the flyash overlying sandy media such as dune sand. Fine-grained material overlying coarser grained material has the ability to develop a capillary barrier, wherein the coarse grained material forces the moisture to stay in suspension in the fine-grained material, until such time that the fine-grained material reaches saturation. This physical property, coupled with the facts that the subject fine-grained material is hydrophilic, and that the site is in an arid area, makes the situation conducive to hold any moisture in the waste mass, within the waste mass. The capillary barrier creates an impermeable barrier to liquid migration downwards from the waste mass. Therefore the site is not required to install barriers in the form of a constructed clay liner or a geomembrane over clay liner system at the bottom of the landfill. Furthermore, the design includes a conservative fate and transport study to evaluate the fate and transport of contaminants and this modeling indicates no migration of contaminants above accepted maximum contaminant levels off the landfill boundary.

COMMENTS RELATED TO DESIGN AND GROUNDWATER MONITORING ISSUES

Comments relating to landfill design and groundwater monitoring issues received from all the commenters are grouped together and presented in italics below.

Groundwater monitoring wells near the current and proposed landfill phases may not adequately measure the movement of sulfate pollution and other potential contaminants in groundwater that appears to flow to the northwest toward the Arkansas River. This potentially serious problem must be studied and addressed before permit action is taken.

Protect groundwater over the long term – not 20 years but at least 1,000 years. Do this by locating in a more suitable site or by requiring a synthetic or impermeable liner under the waste.

The proposed landfill near the Arkansas River to dispose of ash and sludge could be another disaster waiting to happen.

No liner, and the sand – any contaminant will travel straight through. The design doesn't have something to stop transport of contamination to groundwater.

The fact that the new landfill design does not call for a liner under the waste to protect groundwater over the long term.

I understand that the company has chosen the least expensive route, not the safest path for construction of their proposed 20 million cubic yard capacity landfill. Common Facilities propose building without an impervious liner. The flyash and the scrubber contents containing such substances as barium, arsenic, mercury, lead, cadmium, chromium and selenium are to pack and make their own firm base, built on shifting sands. The immediate need is for a more comprehensive long-term study of the effects of the Holcomb coal-fire landfill pollutants on the ground strata. Neither has a hydro-geological study been performed in the assessment of groundwater movement to public and private wells from the water rights purchased by the Holcomb plant.

The new landfill design does not call for a synthetic or impermeable liner under the waste to protect groundwater over the long term. The existing landfill was operated for 20 years with the monitoring wells in the wrong location and insufficient data is available to assess pollutant migration.

This waste material is not biodegradable, hasn't been monitored correctly in it's existing site, yet doesn't call for synthetic or impermeable liners to be placed underneath it to protect groundwater.

Applicant uses the HELP model to develop gross estimations of percolation through the landfill to the groundwater:

1. *The hydraulic conductivity value used to achieve the modeled rate of percolation through the cap and landfill mass of 0.18 inch per, year, a critical component of the support for no liner and a thin sand cap, assumes that the field hydraulic conductivity of the cap is equal to the laboratory test value from the only sample they chose to report, 5.09×10^{-6} cm/sec. It is also noted that the value of the sample is unrealistically low when compared to the eolian sands expected to be available and used for the cover.*
2. *The HELP model presented in the documentation indicates that sandy loam will achieve 0.18 inches per year; this is better than is expected of a clay liner.*
3. *Fracturing of the disposed coal combustion wastes after they have hardened after disposal can be anticipated in response to operation of heavy equipment on top of disposed waste and addition of additional waste. The idea that coal combustion wastes of variable composition, placed in thin layers over a period of many years, exposed to varying amounts of water, reacting at different rates and times, and run over with heavy equipment could be expected to solidify into a solid monolithic mass without fracturing is beyond the realm of reason.*
4. *The hydraulic conductivity values for native soils used in the HELP model are not values typical of the ASTM classification given to the soil.*
5. *The HELP model appears not to take into account any rainfall that will fall on the waste before placement of the final cap.*
6. *The HELP model does not account for irrigation water that will be required to establish and maintain vegetative ground cover.*

Applicant uses the IWEM model to project the expected concentration of contaminants at the points of compliance (monitoring wells):

1. *The application states that the hydraulic gradient has a range of 0.013 to 0.014 while using a value of 0.0015 in the model.*
2. *It is unclear why the distance to well, depth to water, conductivity, gradient, and thickness change with model run. A worst-case scenario should be developed.*
3. *Contaminants evaluated should include not only contaminants with MCLs established under the Safe Drinking Water Act, but should also consider agricultural and industrial use wells that could be impacted if the groundwater is contaminated. Contaminants should include boron, selenium, sulfate, chloride, SAR (sodium activity ratio), and total dissolved solids.*
4. *Alkalinity and boron are parameters that are not included in the IWEM modeling though based on an unpublished study report to Sunflower Electric in 2001, these parameters may increase in concentration in the leachate with additional pore volumes.*

The 15% grade of side slopes of the landfill will slump during intense rainfall events, exposing the waste.

The design of the retention pond includes the installation of a hypalon liner. The landfill also should have a synthetic liner to protect against drainage to the groundwater.

A leachate collection system should be installed above the liner system to collect leachate that migrates through the waste and accumulates above the liner.

A recently published study by the USEPA Office of Research and Development (USEPA, 2006) tested various leaching procedures against databases of field generated leachate chemistry and states, "Leaching tests such as the TCLP (which reflects MSW co-disposal conditions) or the synthetic precipitation leaching procedure (SPLP), or any number of deionized water based tests may be inappropriate, or are at least not optimal for evaluating the leaching potential of CCRs as they are actually managed". The USEPA Office of Research and Development adopted the "Integrated Framework for Evaluating Leaching in Waste Management and Utilization of Secondary Materials"(Kosen et al., 2002) as the preferred leach testing methodology. Without an accurate assessment of leachate source concentrations, evaluation of the potential for impacting ground water at levels above regulatory levels cannot be achieved.

The monitoring well locations, from the time that they were initially installed, have not been located downgradient of the landfill or retention pond. This is a significant error. At the current time, impacts to groundwater cannot be assessed. In fact, there may exist groundwater contamination attributable to leachate from the existing landfill that cannot be detected with the current monitoring network.

The permit application asserts that the sulfate concentrations in the groundwater, an indicator of leachate from the Sunflower Power Plant wastes, have remained low and have remained low and

have not exceeded background values, "indicating that the landfill is performing as designed." This assertion is without merit. Review of the current groundwater monitoring system and potentiometric surface plots provided with the application shows that the current monitoring system is incapable of detecting releases to groundwater from the existing landfill.

The Sampling and Analysis Plan calls for annual sampling of both existing and newly constructed monitoring wells. New wells are to be constructed and phased into the monitoring network as additional phases of the landfill are developed. Given the applicant's failure to maintain a functional downgradient monitoring system over the 20 year operation of the existing landfill, all of the planned wells should be installed and monitored quarterly for the full suite of parameters for at least a year before development of the landfill begins. Such monitoring is needed to establish baseline concentrations that can be used to evaluate whether operation of the landfill expansion results in degradation of ground water.

The Sampling and Analysis Plan must identify a point of compliance, located no further from the landfill mass than groundwater will flow over a six-month period. Monitoring wells must be constructed along this point of compliance, downgradient of each phase of the existing and expanded landfill. The plan must include specific limits defining maximum allowable levels for each contaminant and must specify what actions will be taken if degradation of groundwater quality is detected downgradient of the landfill.

Given the highly permeable nature of subsurface soils and pumping induced changes to water table, annual groundwater monitoring is entirely insufficient. All wells should be sampled and potentiometric surface maps prepared at a minimum of quarterly for the duration of landfill development and operation, and during the post-closure care period.

There has historically been inconsistency of parameters that have been analyzed. The following constituents are typical of coal ash leachate: aluminum, arsenic, antimony, barium, boron, cadmium, chromium, copper, fluoride, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, zinc, sulfate, thallium, and chloride. These constituents should all be consistently analyzed. The field parameters pH, turbidity, and conductivity should also be measured. The groundwater sampling and analysis plan does not include all the parameters indicated above and provides no trigger levels for additional monitoring or corrective actions when exceedances are found. This is a significant flaw in the Sampling and Analysis Plan.

The monitoring wells were originally installed October 1982, at the time that the landfill was constructed; however, no groundwater quality data is available until 1984. Without data for the periods immediately prior to and following construction and commencement of operation of the existing landfill, it is difficult to assess impacts of landfill operations on groundwater. If there were an increase in parameter concentrations observed during that two-year (1982-1983) period, it would potentially indicate that an early release occurred from the landfill. It is known that the concentrations in groundwater from MP-1, MP-2, and MP-3 in 1984 exceeded the MCLs for iron, cadmium, lead, manganese, sulfate, and chromium. If these concentrations exceed earlier data, it suggests that an early release occurred during that two-year period.

The groundwater data from 1984 and 1985 show groundwater at wells MP1 through MP3 exceeding applicable standards for iron, chromium, arsenic, lead, magnesium, sulfate and chromium. Data presented for the year 2000 indicated that only well D3 was exceeding standards for iron, lead, magnesium, and chromium. This indicates a decrease in concentrations and parameters detected. The only parameter in 2001 that was detected above the MCLs was iron in deep wells D2 and D3. This is a significant decrease in the number and frequency of parameters exceeding the MCL. This may indicate that releases from the current unlined landfill have occurred but have not been detected because they have been intercepted by a facility well located near the landfill.

The actual groundwater flow direction is determined based on only three wells. There are other wells in the area that could be used. The existing wells on site and off-site should be used to produce a more accurate potentiometric surface map than exists today. Any historical data that may be available could provide insights into how today's flow system varies from that which existed at times when the contaminants discussed above were being detected at concentrations above their MCLs.

The waste characterization presented in the application did not include iron and manganese, which are the most frequently detected parameters in groundwater.

The Sunflower Power Plant is to add Selective Catalytic Reduction (SCR) pollution control in 2009 and 2010. This process involves the addition of ammonium. Nitrogen was not included in the parameter list to be analyzed. The parameters to be monitored should include all chemicals that potentially could be included in the wastes.

Pumping of groundwater in the area of the Sunflower Power Plant has reversed flow so that groundwater below the existing landfill now flows toward the northwest. Base upon head mapping that is included in the application, a plant water production well, located west of the current landfill, appears to create a cone of depression that may capture a significant portion of the contaminated groundwater that leaves the existing landfill, whether or not it is completed in the same formation. A pumping test using the water supply well and other site wells should be conducted to document and quantify the communication between the Ogallala and underlying aquifers at the site.

Leachate from the landfill expansion will likely continue to move toward pumping centered on plant water supply wells as long as the plant continues to operate. Once pumping is terminated leachate-impacted groundwater will likely be intercepted by any nearby irrigation wells, resulting in increased mineralization of spray water and build-up in the soil. In any event, once on-site pumping stops, contaminants will move in unknown directions, in response to the gradients that then will exist.

The permit application commits Sunflower to install a monitoring well potentially capable of detecting releases from the current landfill only after the permit for the expanded landfill is approved. Adequate, meaningful monitoring of the existing facility is required to assess the performance of the existing facility, prior to considering an expansion. It is preposterous to

approve the proposed expansion as a "carrot" to install a monitoring point that is necessary for the proper evaluation of both the proposed expansion and the existing landfill.

By analogy with the closed landfill at the Lawrence Energy Center, Permit # 333, the leachate at the current landfill in Holcomb, Kansas, owned by Holcomb Common Facilities LLC may contain up to 2900mg/l sulfate anion.

The unreinforced compacted fly-ash layer underlying the landfill may be subject to cracking and fissuring due to uneven hydration, compaction, strength or thickness at time of liner formations, and also due to subsidence of eolian sands below the liner. Leachate, including sulfates, from the landfill may percolate through these cracks, travel vertically through the sandy soils and end up in the alluvial aquifer.

There is extensive sulfate contamination in the alluvial aquifer associated with the Arkansas River. The majority of this area of contamination lies in western Finney and eastern Kearny Counties, centered near Holcomb. Due to the lack of downgradient groundwater monitoring wells at the HCF landfill, there is no direct evidence that the HCF landfill contributed to this contamination; on the other hand, looking at the leachate sulfate concentrations observed in the downgradient monitoring wells at LEC landfill # 333, there is indirect evidence that indicates that the HCF landfill could reasonably have been expected to contribute an unknown amount of sulfate contamination to that in the aquifer arising from other sources.

The closure plans for the various phases of the HCF landfill call for 24 inches of soil to be placed on top of the ash piles, and for sorghum to be planted as a cover crop, along with a mixture of native grasses. Sorghum requires at least 21 inches of irrigation water to survive (in addition to the 19 inches of average rainfall), and since the native soils are highly permeable, this water will act to quickly saturate the landfill, percolating through the soil into the ash pile. The roots of sorghum and native grasses are at least three feet long, which means they will penetrate the soil layer and come into contact with the highly alkaline ash. The result of this contact could be that the vegetation dies off, with the channels created by the withered roots acting as channels for more water to enter the landfill and percolate through the groundwater below. Moreover, the dead plants will no longer act to hold the soil in place, creating the possibility of erosion of cap soil and exposure of the ash pile to the wind.

The permit review team has considered the proximity of the existing and proposed expansion site to the Arkansas River. In the review, consideration has been given to the possibility for a fluctuating groundwater gradient and interconnectivity as well as the interaction of fine-grained media of the flyash overlying sandy media such as dune sand. Fine-grained material overlying coarser grained material has the ability to develop a capillary barrier, wherein the coarse grained material forces the moisture to stay in suspension in the fine-grained material, until such time that the fine-grained material reaches saturation. This physical property, coupled with the facts that the subject fine-grained material is hydrophilic, and that the site is in an arid area creates the ideal situation to hold any moisture in the waste mass, within it. Therefore, no leachate is expected to be generated. The waste compaction and placement plan further assures that all

surface water is diverted to minimize unplanned moisturizing of the waste mass. The capillary barrier creates an impermeable barrier to liquid migration downwards from the waste mass. Therefore the site is not required to install barriers in the form of a constructed clay liner or a geomembrane over clay liner system at the bottom of the landfill. Furthermore, the design includes a conservative fate and transport study to evaluate the fate and transport of contaminants and this modeling indicates no migration of contaminants above accepted maximum contaminant levels off the landfill boundary.

The waste is characterized using testing methods that represent the conditions that could potentially exist at the disposal site. KDHE requires the Synthetic Precipitation Leaching Procedure (SPLP), which is appropriate for industrial landfills with a predominantly large quantity of one waste stream, for Kansas's sites, which are located in precipitation areas west of the Mississippi river.

The performance of the current landfill over the past 23 years has been part of the consideration in the review. This includes the moisture levels within the existing waste mass, the effectiveness of dust control, the success levels of the various methods attempted to establish vegetation on a cover soil, the success of salvaging and marketing the material as a usable product in the community, and the groundwater monitoring history

Groundwater monitoring systems related to permitted sites are reviewed by KDHE before installation is approved. The review assures that adequate monitoring coverage is to be provided. The Sampling and Analysis Plan was also reviewed and approved by KDHE. Sampling requirements for constituents are based on establishing background levels of constituents already present in the groundwater and constituents that could potentially be traced to the disposal area. The sampling events also require the measurement of water levels to evaluate and establish groundwater gradients at the site. Declining water table elevations, or fluctuations in groundwater flow directions are evaluated at certain sampling events. Likewise, the adequacy of the groundwater monitoring system is evaluated periodically. Typically a site is in Detection Monitoring mode at a sampling frequency deemed appropriate for the site, and for the analytes deemed necessary for the waste material. A site may remain in this mode during the entire operational, closure and post-closure period. However, if contaminants are detected in the groundwater while in the Detection Monitoring mode, the monitoring program is elevated to Assessment Monitoring mode to identify the source of contaminants, and the extent of contamination in the groundwater. In the assessment phase, the contamination levels and the statistical significance of the contamination are assessed. The assessment may trigger the Corrective Action mode in which operational changes to the landfill and/or groundwater cleanup procedures are implemented. This is ongoing throughout the life of the landfill including the operational life and post-closure period.

After further review, the proposed groundwater monitoring system construction schedule and associated sampling and analysis plan were modified as follows:

- The Ground Water Monitoring system construction schedule has been revised to install perimeter monitoring wells by December 31, 2007 as noted in Section 2.2 of Volume 2

entitled "Site Hydrogeologic Assessment, Waste Characterization and Fate and Transport Modeling".

- The Sampling and Analysis plan has been amended to require biannual monitoring (refer to Section 2.2 of the Sampling and Analysis Plan in Appendix H of Volume 2 entitled "Site Hydrogeologic Assessment, Waste Characterization and Fate and Transport Modeling".
- The Sampling and Analysis Plan has been amended to include MDL's (refer to Table 3 of Section 2.4 of the Sampling and Analysis Plan in Appendix H of Volume 2 entitled "Site Hydrogeologic Assessment, Waste Characterization and Fate and Transport Modeling".

COMMENTS RELATED TO OPERATIONAL ISSUES

Comments relating to landfill operational issues received from all the commenters are grouped together and presented in italics below.

The site will build up very rapidly and the material may all blow off.

The permit states that waste streams other than CCWB are not approved for disposal at this landfill, unless approved by KDHE in a site-specific operation plan. In the reviewer's opinions, other industrial waste from the facility should be prohibited, since the landfill construction is not suitable for disposal of industrial wastes.

Page 2 of the permit application identifies waste streams including limited construction and demolition material, which can be disposed at the landfill. Page 7 lists types of waste not accepted and includes construction and demolition waste. This is inconsistent.

The operations at the site considers various criteria such as stormwater management, contact water management, dust control, intermediate cover with vegetation, etc..
Waste streams that are generated on-site and have been properly characterized are authorized for disposal as noted in the draft permit special condition, which refers to the site-specific operations plan. Section 1.4 of the operations plan notes the waste streams that are proposed to be disposed; this list does not include construction and demolition waste as defined in Kansas Statute, K.S.A 65-3402(U).

COMMENTS RELATED TO CLOSURE AND POST-CLOSURE ISSUES

Comments relating to landfill closure and post-closure issues received from all the commenters are grouped together and presented in italics below.

Sierra Club's experts have questioned what will happen after the owner is no longer required to maintain the facility ….. after the vegetative cover dries up, and cracks and erosion accelerate percolation of precipitation.

Protect groundwater over the long term – not 20 years but at least 1,000 years. Do this by locating in a more suitable site or by requiring a synthetic or impermeable liner under the waste.

Once the post closure period is over, the cap and the vegetative cover will be allowed to degrade…potentially leaving the State of Kansas with problems after the applicant's post-closure period has lapsed.

Kansas' solid waste regulations require a facility to be closed and maintained after closure in such a manner as to achieve a state of equilibrium within the minimum 30-year post-closure care period. Groundwater monitoring and cover maintenance are key components of the post-closure monitoring and evaluation. If within the minimum 30-year period, KDHE determines that post-closure care needs to be amended or extended, KDHE regulations explicitly authorize the department to do that.

COMMENTS RELATED TO FINANCIAL ASSURANCE ISSUES

Comments relating to landfill financial assurance issues received from all the commenters are grouped together and presented in italics below.

If the existing site is used, the company should provide funding to ensure responsible maintenance of the site for the LONG TERM.

In accordance with Kansas's regulatory requirements Sunflower will maintain, on behalf of HCF, the third-party financial assurance that could be utilized as a matter of last resort, to fund the closure of the landfill and subsequently monitor the landfill and groundwater conditions for the 30-year post-closure period.

I know we use LLC's to limit present and future liability. Does this mean that Sunflower Electric is simply trying to avoid increased liability for future problems? I assume these would be at the taxpayers' expense.

The permittee is required to provide financial assurance to KDHE to ensure that the site will be properly closed and cared for during post-closure. Costs are estimated annually to cover the cost of third-party closure, if necessitated during the following year, and during the ensuing post-closure care. The approved cost estimates are required to be assured with one of several regulatorily specified financial instruments so KDHE can call on those funds if the need should arise. The regulatorily allowed financial mechanisms factor in issues such as the corporate structure and bond rating of the permittee.

Sunflower Electric Power Corporation currently provides a funded trust fund on behalf of HCF. The amount of the trust fund is in excess of current total closure and post-closure cost estimates.

Other authorized financial assurance mechanisms include surety bond, irrevocable letter of credit, insurance policy, a corporate financial test, or a corporate financial guarantee. All financial assurance forms must be worded identical to the forms provided by the department. The financial institution must meet the quality and reliability standards set forth by federal and state agencies. If a corporate financial test or guarantee is selected as the financial assurance mechanism, the company must meet the financial requirements as specified in K.A.R. 28-29-2108 or K.A.R. 28-29-2109.

These requirements are established to assure that financial assurance is continuous, adequate in amount, available when needed, and legally enforceable.

Furthermore, the minimum post-closure care period is 30 years and by regulation, KDHE may increase the post-closure care period if the site conditions so dictate.

COMMENTS RELATED TO PUBLIC NOTICE RELATED ISSUES

Comment relating to landfill permitting public notice related issues received from a commenter is presented in italics below.

More people would have come if they had known. Now they will only come to be aware when everything blows from the plant to their houses to the north.

Kansas's state regulations require all significant permit actions such as expansion of a landfill's disposal area, to provide public notice of the proposed action. The permit review team assesses the appropriate publications to post the public notice. Regulations require publication in the Kansas Register and in a newspaper having major circulation in the vicinity. In the permit review team's assessment, based on local government action, there was limited local interest, though the overall project generated statewide interest. Therefore, a public hearing was scheduled and held, including an informational meeting segment. Primary permit review team members participated in the informational meeting and the public hearing.

COMMENTS RELATED TO STATUTORY AND REGULATORY INTERPRETATION RELATED ISSUES

Comments relating to landfill permitting statutory and regulatory interpretation related issues received from all commenters is grouped together and presented in italics below.

The Kansas Hazardous and Solid Waste Act and Solid Waste Management Regulations Prohibit the Secretary from Issuing a Permit that Does Not Prevent Groundwater Contamination.

The Permit for the Holcomb Landfill is Subject to the Act's and Regulation's Groundwater Protection Requirements.

The Permit Lacks Source Control Design, Construction and Operating Requirements Sufficient to Prevent Groundwater Contamination.

The Permit Lacks Ground Water Monitoring, Reporting and Corrective Action Requirements Sufficient to Prevent Ground Water Degradation.

The Applicant Has Not and Can Not Demonstrate that Source Control Design, Construction, and Operating, and Groundwater Monitoring, Reporting and Corrective Action Requirements Are Not Needed to Prevent Groundwater Degradation.

The Public Comment Period Should Remain Open because KDHE Has Not Made a Complete Administrative Record Available.

The Kansas Department of Health and Environment (KDHE) is the state agency authorized and charged by state law to assure proper waste disposal in Kansas. (Chapter 65, Article 34 of the Kansas Statutes). One of the means to assure proper solid waste disposal is to require owners/operators of solid waste disposal activities to obtain a permit from KDHE. To conduct the review of applications for solid waste disposal permits, KDHE has established regulations which form a framework of standards within which designers can identify appropriate engineering standards based on the specific site and the specific wastes to be disposed.
In permitting a site, the KDHE review team looks for, and assesses multiple layers of protection to the environment. The review team consists of qualified/trained personnel with expertise in their respective fields that review the application for the following:

1. Qualifications and capabilities of the applicant: Review the financial structure, environmental compliance history, criminal background check if appropriate, of the applicant,
2. Local government approvals: Ensure that the applicant has secured local government approvals related to zoning of the site and approval from the Board of County Commissioners that the activity proposed to be permitted is consistent with the County's/Region's Solid Waste Management Plan,

3. Public Participation: Ensure that the public has opportunity to give input into the technical review of the application by KDHE,
4. Site Hydrogeologic Assessment: Assure that the site hydrogeology has been characterized based on regional information and site-specific information. This information is to be used in the design and operation of the containment and the groundwater monitoring system.
5. Location issues: Assess the site to address potential impacts to/from neighbors within specified distances, airports, streams and related floodplains, navigable rivers, public surface water intakes, seismic impact zones, historic sites, wetlands, and wildlife,
6. Design issues: The waste to be managed is characterized by testing, and the disposal site designed to assure proper containment of the waste mass, and that gaseous and liquid contaminants that may be generated by the waste mass are managed appropriately.
7. Construction issues: Assure that the permit documents include a Construction Quality Assurance (CQA) Plan prepared by a Kansas licensed professional engineer and that the plan assures construction be in accordance with the approved design. Disposal of waste is only authorized in areas that have been constructed under the oversight of a CQA engineer and the engineer's certification approved by KDHE. Acceptance of the final closure documents for the landfill has to follow a similar process.
8. Operational issues: The permit operational plan addresses the disposal of waste within the landfill to assure proper containment while minimizing impact to the environment. Impacts such as aesthetics, odor, waste mass stability, stormwater management, etc. are considered in accordance with the approved design.
9. Environmental monitoring: Groundwater is monitored at the site. Typically a site is in Detection Monitoring mode at a sampling frequency deemed appropriate for the site, and for the analytes deemed necessary for the waste material. A site may remain in this mode during the entire operational, closure and post-closure period. However, if contaminants are detected in the groundwater while in the Detection Monitoring mode, the monitoring program is elevated to Assessment Monitoring mode to identify the source of contaminants, and the extent of contamination in the groundwater. In the assessment phase, the contamination levels and the statistical significance of the contamination are assessed. The assessment may trigger the Corrective Action mode in which operational changes to the landfill and/or groundwater cleanup procedures are implemented.
10. Financial Assurance: The permittee is required to provide financial assurance to KDHE to assure that the site will be properly closed and cared for during the post-closure period. Costs are estimated annually to cover the cost of third-party closure, if necessitated during the following year, and the ensuing post-closure care. The approved cost estimates are required to be assured with one of several regulatorily specified financial instruments so KDHE can call on those funds if the need should arise.

In summary, this multi-layered permitting mechanism assures that there are several safeguards built into the operation of permitted solid waste disposal facilities in Kansas.

COMMENTS RELATED TO OTHER CONCERNS

Comments relating to other concerns received from all commenters is grouped together and presented in italics below.

Object to addition of coal-fired power plants because of the heavy use of water.

Object to addition of coal-fired power plants because of the high emissions of carbon dioxide and other greenhouse gases.

The Sierra Club has called for more study of this project.

Object to the expansion of the coal fired power plant and waste landfill since Kansas cannot afford the air, water and soil pollution from this project. Heavy metals such as mercury will compromise the safety of soil and water.

The Office of the Chief Engineer of the Division of Water Resources of the Kansas Department of Agriculture administers state requirements for the use of water in Kansas. Interested people may wish to contact the department directly at 109 W 9th Street, Topeka, KS 66612.

The Bureau of Air and Radiation of the Kansas Department of Health and Environment administers state requirements relating to potential air pollutants.

CONCLUSION

In reviewing the application for the expansion of the solid waste disposal area, the KDHE has determined that the solid waste disposal aspect of the project meets the regulatory requirements for amendment of the permit to authorize the requested expansion.

The statutes and regulations mentioned in this letter can be found at the KDHE BWM web site http://www.kdheks.gov/waste/index.html.

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